

**COMMERCIAL THERMOPLASTICS:****2.6.1 Polyethylene (PE):**

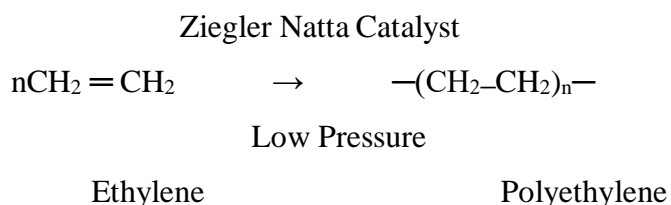
It is obtained by the polymerization of ethylene. Low Density Polyethylene (LDPE) and High Density Polyethylene (HDPE) are the homopolymers of ethylene

LDPE: It is a linear polymer with branching. It is manufactured under high pressure (1000-3000 atm) and in the temperature range of 80-350 C using benzoyl peroxide as catalyst.



Polymer molecules have lots of branching and molecules unable to pack closely

HDPE: It is a linear polymer with little or no branching. It is produced under low pressure using Ziegler-Natta catalyst (Tri ethyl aluminium & TiCl₄)



Polymer molecules have little or no branching and are able to arrange closely

Properties

Property	Density	Temp Range	Tensile Strength	Flexibility
LDPE	0.92	107-120 C	85-136	Flexible
HDPE	0.95	130-178 C	204-313	More Rigidity

Uses: LDPE- Food, Garment packing, squeeze bottle, sheet, wire insulations

HDPE- Dustbins, milk bottles, drums, containers, cable insulations